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ABSTRACT

The Bender Visual Motor Gestalt Test (BG), a test of visual-motor integration, is a screening device used to investigate school-related factors that may produce poor academic achievement and learning disabilities. Because BG test stimuli are not obviously related to classroom content, and because BG scores are frequently offered as evidence of need of special education placement, its validity has often been questioned. Two studies were conducted examining the effects of selected sociocultural variables on BG developmental scores. The first study examined the effects of ethnicity, gender, social class and age on BG developmental scores. Emotional indicators (EI) were also compared across the same variables. This study showed ethnicity was significant as a predictor variable in that black children made a significantly greater number of scoring errors than white children. Social class membership also produced significant differences in scores. Study two compared the effects of ethnicity, gender and social class on BG developmental scores and EI scores. The validity of the BG for predicting academic achievement was examined by comparing BG developmental scores and scores of the California Achievement Test. The results did not support the contention that black students tend to obtain lower BG scores than white students; when IQ was held constant across groups, no significant differences between black and white children were obtained. Interpretation of BG scores is best accomplished in light of the respective IQ levels of the students. (BAE)

Sociocultural Factors and Bender Visual Motor Gestalt Performance

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The Bender Visual Motor Gestalt Test (BG), a test of visual-motor integration, is a screening device frequently used to investigate school-related factors that may produce poor academic achievement and learning disabilities. Because BG test stimuli are not obviously related to classroom content, and because BG scores are frequently offered as evidence of need for special education placement, its validity has often been questioned (Salvia & Ysseldyke, 1981).

Primary documentation of BG validity was reported by Koppitz in two seminal books (1973, 1975). In her writings she strongly argues for the value of the BG in the placement process and reports relationships between BG scores and scores on a variety of intellectual, academic achievement, and visual perception measures. She also suggests that the BG is useful in diagnosing emotional disturbance.

However, with the advent of nondiscriminatory assessment, school psychologists have begun to more critically examine claims of test authors regarding appropriate uses of tests. One area that has received careful scrutiny is the degree to which sociocultural factors affect test outcomes (Mercer, 1979). Another crucial factor is ethnicity and its relationship to BG scores (Koppitz, 1975). After reviewing relevant studies, Koppitz reports that black children tended to make more developmental scoring errors than did white children. However, the role of ethnicity as an explanatory

construct is problematical, as the effects of variables subsumed under that rubric are unclear. Koppitz's primary conclusion was that black-white scoring differences were a function of the unique cultural experience of blacks which produced a delay in the development of visual-motor perception. Following this contention, it could be assumed that as children mature these differences should decrease. However, this assumption was not supported in a recent study using almost 2,000 subjects from the SOMPA standardization sample (Sattler & Gwynne, 1982). Their results indicated that black-white differences were consistently maintained over the sample age range from 5 to 11.

Other variables purported to affect BG performance are social class--middle-class pupils tend to make fewer scoring errors than do less advantaged children (Huffman, 1966); gender and ethnicity were found to interact as ethnic differences were obtained for black males and not black females (Adams, Lieb, & Canter, 1973); and age--scoring errors decrease significantly with age (Sattler & Gwynne, 1982).

In order to compare the claims of Koppitz and Sattler and to examine the effects of selected sociocultural variables on BG developmental scores, two studies were conducted. The primary purpose of the first study was to examine the effects of ethnicity, gender, social class, and age on BG developmental scores. Since emotional indicators (EI) are often purported to be valuable clinical indicators (Koppitz,

1963), subjects' EI scores were also compared across the same variables.

Study Two compared the effects of ethnicity, gender, and social class on BG developmental scores and EI scores. Also, the validity of the BG for predicting academic achievement was examined by comparing BG developmental scores and scores of the California Achievement Test Reading, Language, and Mathematics sections.

Method

Study One

Sample. The sample consisted of 124 elementary school students, grades 1-5, attending four school systems--two rural and two urban, within the southeastern United States. All students were selected from a current list of those who were placed in educable mentally retarded, emotionally conflicted, learning disabled, or gifted classes during the current academic year.

Data collection and analysis. The BG was administered and scored according to instructions developed by Koppitz. An independent examiner scored every 10th protocol to establish scoring reliability. The dependent variables were BG developmental scores and emotional indicators. All developmental score differences were compared by using one-way ANOVAs. Variables compared were ethnicity, gender, social class, and age. Since emotional indicators are clinical signs that lack internal consistency, they were compared using chi square analyses (Koppitz, 1963).

Results. Of the four comparisons of the developmental scores, two were significant. The results support the significance of ethnicity as a predictor variable in BG scores in that black children did make a significantly greater number of scoring errors ($F_{2,123} = 4.13$, $p < .01$) than did white children. Social class membership also produced significant differences. Examination of mean differences using Tukey's HSD multiple range procedure indicated that lower-class children had significantly higher error rates than did middle- and upper-middle-class children. Scoring errors did decrease with age. However, the differences did not reach significance. Gender, also, was not found to be a relevant variable. Chi square comparisons indicated that ethnicity, gender, age, and social class had no significant effects on the number of EIs that were obtained.

Study Two

Sample. The incidental sample consisted of 32 fourth-grade students, 9 white females, 8 white males, 9 black females, and 6 black males. The students attended schools located in lower socioeconomic sections in an industrial city in the Southeast. The average age of the subjects was 9.8, while the average IQ (WISC-R) was 99, s.d. = 6.

Data collection and analysis. The BG was administered and scored according to instructions developed by Koppitz (1975). An independent examiner scored nine protocols to establish scoring reliability. Examiners concurred on more than 90% of the errors scored. Recent California Achievement

Test scores--Reading, Language, and Mathematics sections--were obtained from the students' permanent records. Respective means and standard deviations were: Reading, $\bar{X}$ = 444, s.d. = 40.8; Language, $\bar{X}$ = 511.3, s.d. = 32.7; and Mathematics, $\bar{X}$ = 440, s.d. = 26.2.

The BG developmental scores and EIs derived from frequency counts of errors made as the subjects attempted to reproduce each of the designs were obtained. Differences for ethnicity and gender for the developmental scores were examined by using uncorrelated t-tests. Contrary to the prior outcome, no significant differences were obtained for ethnicity nor were any obtained for gender (t = 1.79, t = 1.92, respectively).

To examine the effects of BG scores on academic achievement, CAT scores in reading, language, and mathematics were correlated with BG developmental scores. One significant correlation between the BG developmental scores and CAT mathematics section was obtained (r = .38). Other correlation coefficients were not significant.

Koppitz suggests that EIs are clinical signs that lack internal consistency and, hence, are not meaningfully compared against any other test score. Therefore, to compare the effects of gender and ethnicity on the EIs, chi square analyses were conducted. While ethnicity was not found to be a significant variable, females scored significantly higher than did males (X^2 = 8.9, $p < .01$). The finding was

somewhat unusual since the incidence of EIs is generally higher among boys than among girls.

Discussion. While previous research (Sattler & Gwynne, 1982) indicates that black students tend to obtain lower BG developmental scores than do whites, these results are mixed in that Study Two did not support that contention. For the second sample, the BG measured the acquisition of visual-motor integration capabilities for fourth-grade students without regard to ethnicity or gender. These findings support those of Zuelzer, Stedman, and Adams (1976) which suggested that when IQ is held constant across groups, no significant differences between black and white children were obtained. The implication here is that interpretation of BG scores is best accomplished in light of the respective IQ levels of the students. For students with lower IQs, examiners might expect to over-predict a variety of learning difficulties. Obviously, further questions regarding the validity of both the Bender and standardized IQ tests are raised. The fact that these tests somehow seem to relate to the same cognitive variables may be viewed either as a heartening example of their clinical applicability or as an example of their ethnic/cultural bias.

In respect to the EIs, the most clear cut outcome is that subjects in Sample Two differed from those in Study One. No consistent recommendation for these groups can be made as no hypotheses concerning predicted effects of ethnicity or gender were supported.

Relative to predicting academic achievement, BG scores were not particularly helpful because the significant correlation accounted for only about 15% of the variance. However, in Study Two the size of the correlation was attenuated since the range of IQ scores for the subjects was somewhat restricted.

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